

California High-Speed Rail Authority



RFP No.: HSR 13-57

**Request for Proposals for Design-Build
Services for Construction Package 2-3**

**Reference Material, Part C.4
Geotechnical Data Report (GDR)
(Erratum)**

CALIFORNIA HIGH-SPEED TRAIN

Engineering Report

Preliminary Engineering for Procurement Record Set Submission

Fresno to Bakersfield

Sierra Subdivision Construction Package 2-3 Erratum to Geotechnical Data Report

April 2014

RFP No.: 13-57 – Addendum No. 1 - 05/30/2014



**Preliminary Engineering for
Procurement
Record Set Submission
Fresno to Bakersfield
Sierra Subdivision
Construction Package 2-3
Erratum to Geotechnical Data Report**

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April 2014

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Executive Summary

This Erratum includes errata and addenda to the Record Set issue of the Geotechnical Data Report (GDR) for the Fresno to Bakersfield Subdivision Construction Package 2-3 of the California High-Speed Train Project.

Changes in this Erratum are as follows:

- Inclusion of additional piezometer readings between January 6, 2014, and April 16, 2014.
- Correction to mislabeling of Table 6.7-1 summarizing the results of soil corrosion testing.
- Inclusion of previously omitted piezometer installation logs as a supplement to GDR Appendix B.

The same chapter and section numbering has been retained. Italicized font represents commentary only. Normal font represents the replicated text, including any correction(s).

5.0 Ground Investigations

5.5 Observation Wells

5.5.2 Frequency of Testing

5.5.2.1 Results

Additional manual measurements of water level taken after 1/6/2014 are presented in Table 5.5-2.

Table 5.5-2
Groundwater Levels Measured in Standpipe Piezometers

Piezometer ID	S0020R	S0029R	S0068R	S0071R	S0072R
Well Box Elevation	278.2	260.1	198.2	192.2	196.0
Date Read	Measured Depth Groundwater ^[1] (ft)				
10/29/2013	88.4 ^[2]				
11/8/2013			31.8 ^[2]		
11/12/2013			29.8	24.0	42.5
11/13/2013	90.3	103.8			
1/6/2014	86.7	–	30.4	10.4	38.2
2/19/2014	87.8	104.0	32.0	11.7	38.3
4/16/2014	89.4	103.8	34.0	11.5	38.1
^[1] Measured with water meter					
^[2] Measured prior to well development					

Additional datalogger and manual measurements of water level taken after 1/6/2014 are presented in Figure 5.5-2.

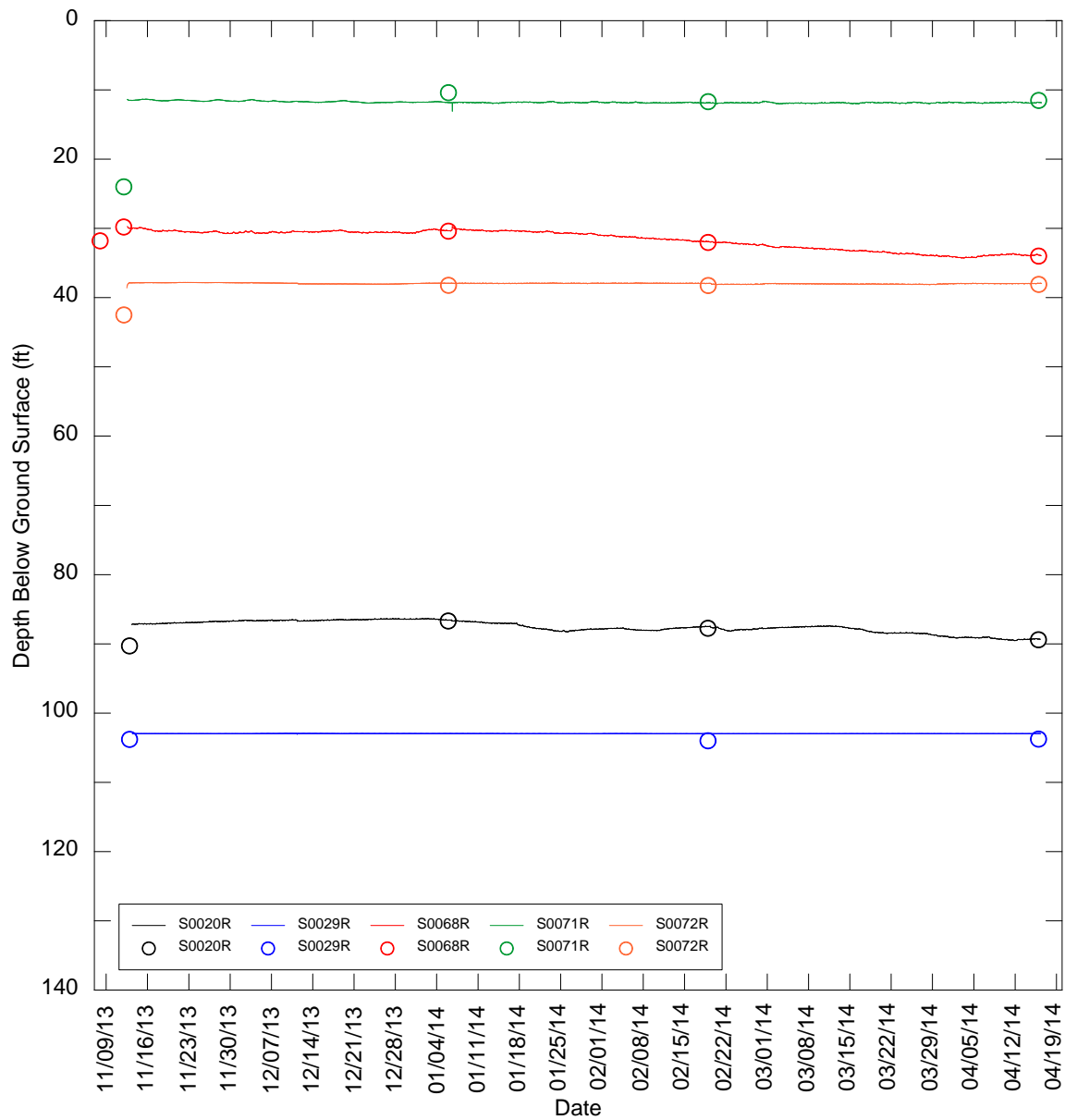


Figure 5.5-2
Groundwater Depths Measured in Standpipe Piezometers

6.0 Laboratory Investigations

6.7 Soil Corrosion Testing

The labels of Chloride and Sulfate in Table 6.7-1 were switched. The correct labels are shown below.

Table 6.7-1
Summary of Results from Soil Corrosion Tests

Test	Test Reference	No. of Tests	Range of Values	Mean Value	Standard Deviation
Minimum Resistivity	ASTM G 57	5	399 to 6,284 ohm-cm	1,830 ohm-cm	2,498 ohm-cm
pH	ASTM D 4327	5	6.4 to 9.92	8	2
Sulfate	ASTM D 4327	5	50 to 437 ppm	204 ppm	173 ppm
Chloride	ASTM D 4327	5	24 to 963 ppm	437 ppm	474 ppm

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Appendix B-1

Piezometer Logs



STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:
S0020R

Project: California High Speed Rail - Fresno to Bakersfield
Location: Manning Ave East of Cedar Ave
Client: California High Speed Rail Authority
Drilling Co.: Gregg Drilling
Driller: E. Santellan

Project No.: 131577-00
Project Mgr: M. Walker
Field Eng. Staff: CH
Date Installed: 8/21/2013

Ground El.: 278.21 ft.
Vertical Datum: NAVD 88

Boring Location:

N: 2104378.614 **E:** 6341583.03
Horizontal Datum: NAD 83 CA Z4

Well Cover:

☐ Guard Pipe ☒ Roadway Box
☐ Other: _____

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Total Number of Piezometers in Borehole	
See corresponding borehole log for stratigraphy	Neat Cement Grout	1	
		Type of Protective Cover/Lock Traffic-rated well box	
		Length 1.0 ft.	
		Inside Diameter 10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface 0.0 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface 0.25 ft.	
		Depth of Bottom of Casing _____ ft.	
		Type of Seal Top of Seal (ft) Thickness (ft) No casing installed _____ _____	
		Type of Riser Pipe 2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe 2.0 in.	
4-ft Bentonite Plug	Type of Backfill Around Riser Neat cement grout backfill above a 4.0 ft bentonite plug		
	Diameter of Borehole 7.0 in.		
	Depth of Top of Well Screen 80.0 ft.		
	Type of Screen 2" PVC Sch 40 Screen		
	Screen Gauge or Size of Openings 0.02 in.		
	Diameter of Screen 2.0 in.		
	Type of Backfill Around Screen #3 sand		
	Depth of Bottom of Well Screen 100.0 ft.		
	Depth of Bottom of Silt Trap 100.5 ft.		
	Depth of Bottom of Borehole 101.5 ft.		
#3 Filter Sand	(not to scale)		
	$ \begin{array}{l} \text{Length of Riser (L}_1\text{)} \\ + \\ \text{Length of Screen (L}_2\text{)} \\ + \\ \text{Length of Silt Trap (L}_3\text{)} \\ = \\ \text{Total Length} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		
	$ \begin{array}{l} 80.0 \text{ ft.} \\ + \\ 20.0 \text{ ft.} \\ + \\ 0.5 \text{ ft.} \\ = \\ 100.5 \text{ ft.} \end{array} $		

*Note: Numbers refer to depth from ground surface in feet
 (+) = depth below ground surface
 (-) = depth above ground surface

Comments: Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)
 Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)
 Cement: Basalite Type II-V cement, Portland cement (47 lb bags)



STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:
S0029R

Project: California High Speed Rail - Fresno to Bakersfield
Location: Topeka Ave South of Conejo
Client: California High Speed Rail Authority
Drilling Co.: Gregg Drilling
Driller: E. Santellan

Project No.: 131577-00
Project Mgr: M. Walker
Field Eng. Staff: NG/SV
Date Installed: 8/28/2013

Ground El.: 260.07 ft.
Vertical Datum: NAVD 88

Boring Location:

N: 2070526.117 **E:** 6350083.042
Horizontal Datum: NAD 83 CA Z4

Well Cover:

☐ Guard Pipe ☒ Roadway Box
☐ Other: _____

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Total Number of Piezometers in Borehole	
See corresponding borehole log for stratigraphy	Neat Cement Grout	1	
		Type of Protective Cover/Lock	
		Traffic-rated well box with 9/16" hex bolts	
		Length	
		1.0 ft.	
		Inside Diameter	
		10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface	
		0.25 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface	
0.16 ft.			
Depth of Bottom of Casing		ft.	
Type of Seal		Top of Seal (ft)	
Thickness (ft)			
No casing installed			
	2-ft Bentonite Plug	Type of Riser Pipe	
		2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe	
		2.0 in.	
		Type of Backfill Around Riser	
		Neat cement grout backfill above a 5.0 ft bentonite plug	
		Diameter of Borehole	
		5.0 in.	
		Depth of Top of Well Screen	
		85.0 ft.	
	#3 Filter Sand	Type of Screen	
		2" PVC Sch 40 Screen	
		Screen Gauge or Size of Openings	
		0.02 in.	
		Diameter of Screen	
		2.0 in.	
		Type of Backfill Around Screen	
		#3 sand	
		Depth of Bottom of Well Screen	
		105.0 ft.	
Depth of Bottom of Silt Trap		105.5 ft.	
Depth of Bottom of Borehole		125.0 ft.	
(not to scale)			
125.0 ft. (Bottom of Exploration)			
*Note: Numbers refer to depth from ground surface in feet (+) = depth below ground surface (-) = depth above ground surface			
85.0 ft. Length of Riser (L ₁)		+	20.0 ft. Length of Screen (L ₂)
		+	0.5 ft. Length of Silt Trap (L ₃)
		=	105.5 ft. Total Length

Comments: Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)
 Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)
 Cement: Basalite Type II-V cement, Portland cement (47 lb bags)



STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:
S0068R

Project: California High Speed Rail - Fresno to Bakersfield
Location: SR 43 South of Ave 144
Client: California High Speed Rail Authority
Drilling Co.: Gregg Drilling
Driller: D. Heavilin

Project No.: 131577-00
Project Mgr: M. Walker
Field Eng. Staff: SV
Date Installed: 10/23/2013

Ground El.: 198.24 ft.
Vertical Datum: NAVD 88

Boring Location:

N: 1898742.757 **E:** 6409397.825
Horizontal Datum: NAD 83 CA Z4

Well Cover:

☐ Guard Pipe ☒ Roadway Box
☐ Other: _____

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Total Number of Piezometers in Borehole		
See corresponding borehole log for stratigraphy	Neat Cement Grout		1	
			Type of Protective Cover/Lock Traffic-rated well box	
			Length 1.0 ft.	
			Inside Diameter 10.0 in.	
			Height/Depth of Cover Above/Below Ground Surface 0.25 ft.	
	6-ft Bentonite Plug		Height/Depth of Riser Pipe Above/Below Ground Surface 0.16 ft.	
			Depth of Bottom of Casing _____ ft.	
			Type of Seal	Top of Seal (ft)
			Thickness (ft)	
			No casing installed	
	#3 Filter Sand		Type of Riser Pipe 2" PVC Sch 40 Riser	
			Inside Diameter of Riser Pipe 2.0 in.	
			Type of Backfill Around Riser Neat cement grout backfill above a 6.0 ft bentonite plug	
			Diameter of Borehole 5.0 in.	
			Depth of Top of Well Screen 20.5 ft.	
		Type of Screen 2" PVC Sch 40 Screen		
		Screen Gauge or Size of Openings 0.02 in.		
		Diameter of Screen 2.0 in.		
		Type of Backfill Around Screen #3 sand		
		Depth of Bottom of Well Screen 50.5 ft.		
Depth of Bottom of Silt Trap 51.0 ft.				
Depth of Bottom of Borehole 151.5 ft.				
(not to scale)				
151.5 ft. (Bottom of Exploration) *Note: Numbers refer to depth from ground surface in feet (+) = depth below ground surface (-) = depth above ground surface		20.5 ft. + 30.0 ft. + 0.5 ft. = 51.0 ft. Length of Riser (L ₁) Length of Screen (L ₂) Length of Silt Trap (L ₃) Total Length		

Comments: Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)
 Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)
 Cement: Basalite Type II-V cement, Portland cement (47 lb bags)



STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:
S0071R

Project: California High Speed Rail - Fresno to Bakersfield
 Location: SR 43 South of Ave 64
 Client: California High Speed Rail Authority
 Drilling Co.: Gregg Drilling
 Driller: E. Santellan

Project No.: 131577-00
 Project Mgr: M. Walker
 Field Eng. Staff: SV
 Date Installed: 10/11/2013

Ground El.: 192.22 ft.
 Vertical Datum: NAVD 88

Boring Location:

N: 1854182.477 E: 6435478.341
 Horizontal Datum: NAD 83 CA Z4

Well Cover:

☐ Guard Pipe ☒ Roadway Box
☐ Other: _____

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Total Number of Piezometers in Borehole	
See corresponding borehole log for stratigraphy	Neat Cement Grout	1	
		Type of Protective Cover/Lock	Traffic-rated well box
		Length	12.0 ft.
		Inside Diameter	10.0 in.
		Height/Depth of Cover Above/Below Ground Surface	0.33 ft.
		Height/Depth of Riser Pipe Above/Below Ground Surface	0.0 ft.
		Depth of Bottom of Casing	ft.
		Type of Seal	Top of Seal (ft)
		Thickness (ft)	
		No casing installed	
2-ft Bentonite Plug	#3 Filter Sand	Type of Riser Pipe	2" PVC Sch 40 Riser
		Inside Diameter of Riser Pipe	2.0 in.
		Type of Backfill Around Riser	Neat cement grout backfill above a 5.0 ft bentonite plug
		Diameter of Borehole	6.0 in.
		Depth of Top of Well Screen	36.0 ft.
		Type of Screen	2" PVC Sch 40 Screen
		Screen Gauge or Size of Openings	0.02 in.
		Diameter of Screen	2.0 in.
		Type of Backfill Around Screen	#3 sand
		Depth of Bottom of Well Screen	56.0 ft.
Depth of Bottom of Silt Trap	56.5 ft.		
Depth of Bottom of Borehole	151.5 ft.		
(not to scale)			
<div style="display: flex; justify-content: space-between;"> 151.5 ft. (Bottom of Exploration) 36.0 ft. Length of Riser (L₁) </div>		<div style="display: flex; justify-content: space-between;"> 20.0 ft. Length of Screen (L₂) 0.5 ft. Length of Silt Trap (L₃) </div>	
<div style="display: flex; justify-content: space-between;"> 36.0 ft. 20.0 ft. 0.5 ft. </div>		<div style="display: flex; justify-content: space-between;"> 56.5 ft. </div>	
<div style="display: flex; justify-content: space-between;"> Length of Riser (L₁) Length of Screen (L₂) Length of Silt Trap (L₃) </div>		<div style="display: flex; justify-content: space-between;"> Total Length </div>	

Comments: Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)

Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)

Cement: Basalite Type II-V cement, Portland cement (47 lb bags)



STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:
S0072R

Project: California High Speed Rail - Fresno to Bakersfield
Location: SR 43 North of Ave 56
Client: California High Speed Rail Authority
Drilling Co.: Gregg Drilling
Driller: E. Santellan

Project No.: 131577-00
Project Mgr: M. Walker
Field Eng. Staff: SV
Date Installed: 10/7/2013

Ground El.: 196.00 ft.
Vertical Datum: NAVD 88

Boring Location:
N: 1849930.759 **E:** 6437978.936
Horizontal Datum: NAD 83 CA Z4

Well Cover:
☐ Guard Pipe ☒ Roadway Box
☐ Other: _____

SOIL/ROCK CONDITIONS	BOREHOLE BACKFILL	Total Number of Piezometers in Borehole	
See corresponding borehole log for stratigraphy	Neat Cement Grout	1	
		Type of Protective Cover/Lock	
		Traffic-rated well box	
		Length	
		1.5 ft.	
		Inside Diameter	
		10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface	
		0.5 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface	
0.16 ft.			
Depth of Bottom of Casing		0 ft.	
Type of Seal		Top of Seal (ft)	Thickness (ft)
No casing installed			
	5-ft Bentonite Plug	Type of Riser Pipe	
		2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe	
		2.0 in.	
		Type of Backfill Around Riser	
		Neat cement grout backfill above a 5.0 ft bentonite plug	
		Diameter of Borehole	
		7.0 in.	
		Depth of Top of Well Screen	
		115.0 ft.	
	#3 Filter Sand	Type of Screen	
		2" PVC Sch 40 Screen	
		Screen Gauge or Size of Openings	
		0.02 in.	
		Diameter of Screen	
		2.0 in.	
		Type of Backfill Around Screen	
		#3 sand	
		Depth of Bottom of Well Screen	
		135.0 ft.	
Depth of Bottom of Silt Trap		136.0 ft.	
Depth of Bottom of Borehole		165.0 ft.	
(not to scale)			
<div style="display: flex; justify-content: space-between;"> 165.0 ft. (Bottom of Exploration) 165.0 ft. </div>			
*Note: Numbers refer to depth from ground surface in feet (+) = depth below ground surface (-) = depth above ground surface			
<div style="display: flex; justify-content: space-around;"> <div> 115.0 ft. Length of Riser (L₁) </div> <div>+</div> <div> 20.0 ft. Length of Screen (L₂) </div> <div>+</div> <div> 1.0 ft. Length of Silt Trap (L₃) </div> <div>=</div> <div> 136.0 ft. Total Length </div> </div>			

Comments: Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)
 Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)
 Cement: Basalite Type II-V cement, Portland cement (47 lb bags)

